Keynote Address
Vulnerability Management Best Practices

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Vulnerability Best Practices

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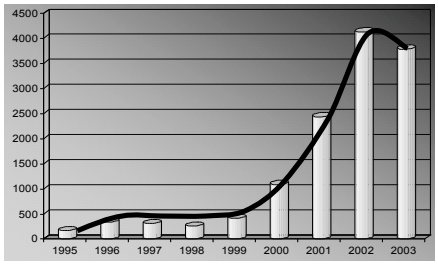
Vendor vulnerabilities on the rise



Source: CERT

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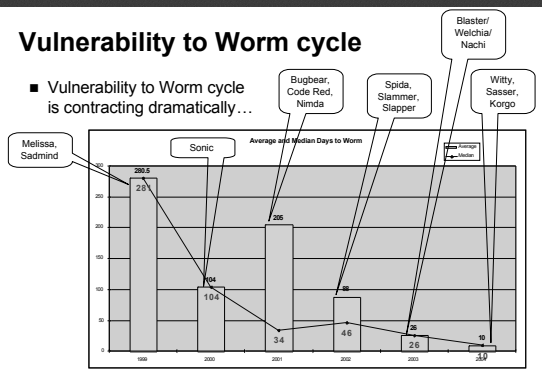
Vulnerability to Worm cycle

- Vulnerability to Worm cycle is contracting dramatically…



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Will vulnerabilities ever go away?

- If, 95-99% of all attacks come from known vulnerabilities and misconfigurations [Carnegie Mellon]
- And, vulnerabilities are on the rise
- And, known vulnerabilities and mis-configurations come from human error
- And, for the foreseeable future, humans will be the creators and maintainers of technology
- **Then, vulnerabilities (and risk) are here to stay!**

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Technology	Vulnerability Related?
NIDS/HIDS	Detecting attackers taking advantage of *vulnerabilities*.
NIPS/HIPS	Detecting and preventing attackers from taking advantage of *vulnerabilities*.
Firewalls/VPN	Blocking attackers taking advantage of *vulnerabilities.*
Patch Management	Fixing *vulnerabilities*.
Anti-virus	Finding and fixing *vulnerabilities*.
Event Correlation	Managing logs/events of attacks (based on *vulnerabilities).*
Policy Management	Ensuring compliance to prevent attacks on *vulnerabilities*.
Encryption	Securing clear-text data (*a vulnerability*).
Content/Email Filtering	Preventing content/email with *vulnerabilities*.
VA/VM & Risk Mgmt.	Discovering and managing *vulnerabilities* and associated risk.

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What does the future hold?

- Zero-day worm categorization
  - Type I: vendor knows of the vulnerability but hasn't released the patch yet (shortest)
  - Type II: vendor doesn't know of the vulnerability (long)
  - Type III: vendor doesn't know of the vulnerability and it hits an EOL product such as Windows 98/NT 4.0 (longest)
- Type III scares me to death!

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So What Can We Do???

- Risk Management Strategies include:
  - Risk Transfer
    - Contractual transfer to 3rd party
    - Insurance provider
  - Risk Avoidance
    - Eliminate existing exposures/capabilities
  - Risk Acceptance
    - Security spending has a point of diminishing returns, some risk is easier to accept
  - Risk Mitigation
    - Security countermeasures (people/process/technology)

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Depends on your philosophy…

- Would you rather affect the symptoms? Or the problem?
  - The cold/flu medication business is much more lucrative than the vaccine business
- Products alone only affect the symptoms…
- Services/products/education in combination, affect the core problem…

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What is Vulnerability Management?

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Gartner on Vulnerability Management

"Vulnerability management is a set of processes and technologies that are used to:

- **Establish and maintain a security configuration baseline**
- **Discover, prioritize and mitigate vulnerabilities**
- **Establish security controls**
- **Eliminate root causes"**

"Enterprises that implement a vulnerability management process will experience 90 percent fewer successful attacks…"

-- Mark Nicolett, Gartner
Dec '03

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What Is Vulnerability Management?

■ At a high level, the intelligent confluence of…

Assessment	**+**	**Analysis**	**+**	**Remediation**
What assets?		What to fix first?		Fix & verify it's fixed!

- Component of Risk Management
- Balance the demands of business goals and processes

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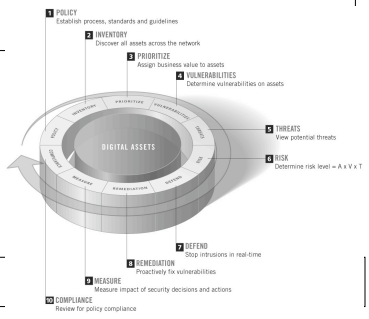
Vulnerability Management Lifecycle



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Asset Inventory and Prioritization

- Inventory Assets
  - All hosts, services, operating systems, asset owner
  - Regular, automated updates
  - Combination of network and agent based technologies
- Create an Asset Criticality Profile (ACP)
  - Data Classification
  - Business process that is supported
  - Environment (Internet vs. Intranet)

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Identify Vulnerabilities and Threats

- Traditional vulnerability assessment
  - Integrate with asset inventory for measurement
  - Regular, automated schedule
- Monitor Threats
  - Track viruses, worms, internal and external threats
  - Map threat environment to existing asset vulnerability inventory

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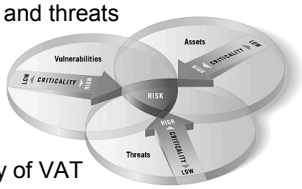
Prioritize Remediation based on Risk

- Identify vulnerabilities and threats
- The Union of:
  - Vulnerabilities
  - Assets
  - Threats
- Based on the criticality of VAT
- Focus your resources on the TRUE risk



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Remediation / Resolution

- Apply the Pareto Principle – the 80/20 rule
  - Focus on the vital few not the trivial many
  - 80% of your risk can be eliminated by addressing 20% of the issues
  - The Risk Union will show you the way
    - Right assets
    - Relevant threats
    - Critical vulnerabilities

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Measure

- Current State of security metrics
  - You can't manage what you can't measure
  - No focus on quantifying "Security"
  - No taxonomy of security
    - The terms risk, criticality, impact, threats are all perverted
    - There is no common definition that is widely adopted
  - Return on Security Investment (ROSI) is extremely difficult to calculate
  - No accountability in security

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Measure

- Future Look:
  - Accountability
  - A universal standard to quantify risk
  - Common nomenclature
  - The use of IRR and NPV calculations for budgeting purposes will increase
  - Dashboard view of assets, vulnerabilities, and threats across disparate organizations
  - Technologies will help answer the questions:
    - Am I secure
    - Who is accountable and by when
    - Am I getting better or worse
    - How am I trending over time
    - How do I compare to my peers

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Training & Communication

- Knowledge is the Foundation
  - External and Internal Resources
  - Security Intelligence
  - Understanding before Reacting
- Centralized Communication
  - Exec to Tech Reporting
  - Justifying the Security Expense

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Conclusions

- All assets are not created equally
- You cannot respond to or even protect against all threats
- An effective vulnerability management program focuses on Risk
  - Vulnerabilities + Assets + Threats
- VM is truly preventative and proactive, not reactive
- Finds and fixes the core problems, not the symptoms
- No other form of security is as effective in reducing risk than vulnerability management